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Systems to Cultivate Suitable Patients for Home Dialysis

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Abstract

The key to developing, initiating, and maintaining a strong home dialysis program is a fundamental commitment by the entire team to identify and cultivate patients who are suitable candidates to perform home dialysis. This process must start as early as possible in the disease trajectory, and must include a passionate and daily focus by physicians, nurses, social workers, and other members of the multidisciplinary team. This effort must be constant and sustained over months, with active promotion of home dialysis for suitable patients at every opportunity. Cultivation of suitable patients must become a defining and overarching mission for the entire program. This website reviews some of the components involved in this worthwhile effort and provides practical tips and links to resources.

Introduction

There are 2 common pathways that lead a patient with severe chronic kidney disease (CKD) to successful home dialysis, which includes home hemodialysis (HD) or peritoneal dialysis (PD) therapy. By far, the easiest and preferred pathway is to identify suitable candidates months or years before they reach end-stage renal disease (ESRD) and start with a home dialysis modality when initiation of renal replacement therapy (RRT) is required. A second but more difficult pathway is to identify potential candidates who are on other forms of RRT and then switch them to home dialysis.

Optimal initiation of dialysis has been defined as starting dialysis electively as an outpatient and using an arteriovenous fistula (AVF), AV graft (AVG) (unless contraindicated), or PD catheter. In contrast, a suboptimal start is defined as hospitalized patients undergoing acute RRT and/or patients in whom a central venous catheter (CVC) has been placed. A suboptimal start is often associated with patients whose initial treatment uses a modality that is not his or her preferred choice and those who have not had the benefit of predialysis education.

This module primarily addresses issues regarding the first pathway; however, potential solutions to overcome suboptimal starts will also be briefly discussed.

Referral to a Nephrology Program

Screening the general population for CKD is not cost-effective and is not recommended. Instead, screening high-risk patient groups using blood and urine tests is recommended. Serum creatinine has been the standard test to assess kidney function, but an increasing number of countries have introduced estimated glomerular filtration rate (eGFR) reporting as a way of identifying patients at high risk of progressive kidney disease and encouraging earlier referral of those patients to nephrologists. In 2013, Kidney Disease Improving Global Outcomes (KDIGO) guidelines introduced a more nuanced staging CKD system that considers the cause of kidney disease, eGFR, and degree of albuminuria as a way to confer risk in a given patient.¹ Once fully implemented, this modified approach may prevent the unnecessary referral of patients with reduced GFR who are not at risk of progression, particularly elderly patients without microalbuminuria. One chapter of the KDIGO publication provides information on when to refer patients with CKD for specialized services. For full details, please see the full KDIGO guidelines section “**5.1 Referral to Specialist Services**”.¹

Preparation for RRT

Despite specific and nonspecific approaches to reverse or slow the rate of progression of CKD, far too many patients with CKD progress toward ESRD. It is a clinical challenge for patients and providers alike to shift focus and accept that preparation for RRT is required. For providers, this means accepting that therapy has failed to prevent progression. For patients and families, this means overcoming denial and other defense mechanisms, and considering information and choices that may be frightening and perhaps months or years away.

There is considerable evidence that offering a formal predialysis program is beneficial to patient outcomes and increases the uptake of home PD or home HD.²⁻⁶ Indeed, international guidelines highlight that a model of multidisciplinary, team-based predialysis care (ie, a team consisting of nephrologists, nurses, dietitians, social workers, etc) is superior to the care provided by a solo nephrologist and is strongly recommended.^{1,7}

Ideally, 1 year or longer is required to complete all the tasks required of the care team to educate patients and families, and to achieve timely decisions about modality of choice and optimal vascular access (Figure 1).^{8,9}

One modern paradigm involves an eGFR-based approach to steps in the process of preparing patients for ESRD. We support the use of the approach described in the Canadian Society of Nephrology Vascular Access Working Group report, as follows:¹⁰

Figure 1: Ideal Predialysis Patient Flow

- | | |
|--------|--|
| STEP 1 | Identify patients likely to progress to dialysis in the next 12-18 months, and those who have started urgently without predialysis education |
| STEP 2 | Early and frequent education on renal replacement therapy options to patients and family |
| STEP 3 | Offer decision support |
| STEP 4 | Home visit to assess environment
Tour of training unit |
| STEP 5 | Create vascular access 6 months before dialysis initiation |
| STEP 6 | Planned commencement of home training upon dialysis initiation |

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- Set specific targets for tasks during management of CKD Stages 3, 4, and 5 according to the rate of decline of eGFR:

1. Based on rate of decline of 2 – 5 mL/min/year, begin the predialysis modality education program when eGFR reaches approximately 30 mL/min. Patient and physician decisions regarding dialysis modality should be finalized when eGFR reaches 20 mL/min. Patients who choose HD should be referred for consideration/evaluation of AVF and AVG placement when eGFR reaches 15 – 20 mL/min.
2. Patients who experience a rate of decline in eGFR more than 5 mL/min/year should begin the education and modality selection processes earlier, if possible.
3. These task targets may be irrelevant for those patients who are elderly or are stable with non-progressive CKD and are not expected to require HD.

Comprehensive modality education should be provided to all patients, and to interested family members. Education should usually be provided by a nurse clinician/teacher, either individually or to small groups. Ideally, the nurse clinician/teacher will have previous experience with dialysis and a positive attitude toward home-based therapies. It is extremely important to provide all patients with excellent and timely information to allow them to make an informed decision regarding modality. The education program should also include meetings with training staff from both the home HD and PD programs and current patients and their families who are successfully undergoing home dialysis.

Patients who have received the most current, detailed information and are able to make informed decisions are much more likely to choose home dialysis than those patients who are never offered instruction or take part in an education program. There is general acceptance of patient autonomy as a part of the shared decision-making process around modality choice.^{11,12} A tenet embodied in the National Institute of Clinical Excellence (NICE) recommendations around dialysis modality choice states that the most appropriate modality is that which aligns to patients' lifestyles and personal circumstances alongside their clinical requirements.¹³

Predialysis education includes:

- Education about normal and impaired kidney function
- Education about treatment options available, including advantages of each treatment
 - » Transplant (live and cadaveric kidneys), including preemptive live donor transplant before dialysis is required
 - » Home HD
 - » Peritoneal dialysis
 - » Facility-based dialysis
 - » Conservative care and trial of dialysis



Practice Tip

A home dialysis program will not thrive without an energetic and proactive predialysis multidisciplinary team. The team needs to champion home dialysis, and be a credible resource and support to patients and clinical staff alike who will then in turn respect and support patients' decisions.

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Overcoming Service-Level Barriers to Home Dialysis

The major barriers to greater use of home dialysis (both home HD and PD) at a service level relate to inadequate provision of information and education of patients, dialysis unit staff, and nephrologists, as well as to inadequate organizational or structural program support for home dialysis training and care.¹⁴ A strong clinician recommendation that actively promotes home dialysis for suitable patients is a key element and requires optimal education about home dialysis in the course of physician training, and exposure to the local home dialysis program when these physicians enter practice.

Successful home dialysis programs should include (1) a medical director who is a champion of home dialysis and has the support of the physicians, social workers, and dietitians on the team, and (2) experienced nurses who are strong proponents of home dialysis and are good teachers. The program should be busy, supporting a home dialysis population of at least 12 to 20 patients and training 10 or more patients per year, thereby maintaining staff experience and cost-effectiveness. Often, the best approach is regionalization of home dialysis training, rather like transplant programs, with referral of suitable patients to the program for training and home support.



Links to Health Professional Resources

- » [Baxter Healthcare, Healthcare Professionals Education Resources](#)
- » [British Renal Society, Educational Resources](#)
- » [DaVita](#)
- » [The Kidney Foundation of Canada](#)
- » [Kidney Health Australia, Health Professionals](#)
- » [Life Options, How to Have a Good Future with Kidney Disease. Free downloadable CKD patient education toolkit for professionals](#)
- » [National Kidney Foundation](#)



Practice Tip

For a detailed discussion of the issues related to developing a successful home HD program, please refer to the report by Young et al, "How to Overcome Barriers and Establish a Successful Home HD Program", a paper developed on behalf of the American Society of Nephrology Dialysis Advisory Group.¹⁴



Links to Patient Education Resources

- » [American Association of Kidney Patients, Understanding the Role of a Renal Social Worker](#)
- » [British Renal Society, Educational Resources](#)
- » [DaVita, Treatment Options](#)
- » [Home Dialysis Central, Patient Education](#)
- » [The Kidney Foundation of Canada](#)
- » [Kidney Health Australia, For Patients](#)
- » [HomeDialysis.org, Am I Ready to Choose?](#)
- » [Kidney School Module 2, Treatment Options for Kidney Failure](#)
- » [Life Options](#)
- » [Life Options, How to Have a Good Future with Kidney Disease videos \(set of 6\)](#)
- » [My Life, My Dialysis Choice](#)
- » [National Kidney Foundation, Patient Resources](#)
- » [RenalWEB, Patient Education](#)

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Additional Approaches to Educate Patients

A valuable way to augment the education provided by the multidisciplinary team is to connect potential home dialysis patients and their family members with those who are already achieving success on home dialysis (sometimes called a home “champion”). This can be done on a one-on-one basis (ie, peer-to-peer) or in group settings. Peers can provide the additional context and support for ambivalent and frightened potential patients and their families in a way that catalyzes decision making in favor of attempting home dialysis. For more information, see the “Psychosocial Guide for Healthcare Professionals” module with its segment on peer support.

Suitability for Home Dialysis

There is astonishing variability in the prevalence of home dialysis (home HD and PD) both between and within nations, and the larger part of this variability is not explained by patient age and comorbidity.¹⁵⁻¹⁷ The literature shows clearly that many more patients are eligible for home dialysis than are currently receiving it in most regions in the world.

Perhaps the most widely recognized tool for assessment of suitability is the MATCH-D tool (**Method to Assess Treatment Choices for Home Dialysis**), which starts at the default position of home dialysis, escalates to solving for any barriers, and then defaults to facility hemodialysis if the barriers prove insurmountable.¹⁸ As both a practical and philosophical framework, the MATCH-D tool works to identify and maximize opportunities for patients to be offered and accept home dialysis (Table 1).

Table 1. Key Attributes of the Ideal Home HD Patient

Patients	<ul style="list-style-type: none"> • Motivated and committed toward home HD • Clinically stable • Well educated • Modality chosen to suit lifestyle • Good dexterity and sight • Literate
Home Setting	<ul style="list-style-type: none"> • Suitable storage and space • Adequate and stable water and electricity supply • Access to phone • Approval of landlord, if appropriate
Family Support	<ul style="list-style-type: none"> • Family support • Caregiver support, if required • Access to respite care, if appropriate

Adapted from Schatell 2007¹⁸ and NICE Guidelines 2002.¹³



Practice Tip

The medical director should be a champion of home HD with the support of both nurses and doctors alike. The cultivation of patients, either directly or by proxy, requires interprofessional solidarity, as patients are not likely to follow inconsistent recommendations or mixed messages received from a divided professional front.

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Seeking Home Hemodialysis Patients from Overlooked Populations

Failed PD patients

Unfortunately, technique failure is a common cause of PD transition to in-center HD. Because these are patients who previously selected and maintained themselves on PD, many would be suitable for a planned transition to home HD. Timing of these discussions is important, because ideally these patients would have an AVF or AVG created before the PD failure occurred; therefore, elective transfer to home HD could happen without the need for placing a CVC.

Failed transplant patients

Graft loss is another pathway often leading patients to in-center HD. Given that transplanted patients are a highly selected group, younger and more robust than an in-center population, this subgroup would also be potentially suitable candidates for a home dialysis option, either PD or home HD. Once again, timely education and early modality decision making would allow for effective transition to home HD. Shared care models and a multidisciplinary approach, involving both the transplant and home dialysis teams, might improve planning for this transition and avoid late referrals to in-center or to home programs.

Overcoming Suboptimal Initiation of Dialysis

Right Start Approach

Suboptimal initiation of dialysis, which includes initiating dialysis while the patient is hospitalized and/or via a CVC, can result in negative consequences; these negative consequences can occur with either early or late referral.⁵ Fresenius and DaVita have published experiences with such a case-managed approach to the critical first few months of in-center hemodialysis.^{7,19,20}

The mechanics of this approach are variable and can be applied by a dedicated nurse, and/or in a segregated area where incident patients are clustered. One variation of case management involves forming a therapeutic relationship with hospital nephrologists, promoting home dialysis, while incident HD patients are still hospitalized, as has been described previously.¹²

Transition Care

One approach to optimizing uptake of home dialysis employs the philosophy that if at all possible, patients who are potentially suitable for home dialysis should be informed of and offered those modalities before beginning dialysis, and completely avoid exposure to an in-center HD unit.^{12,21} Patients who are undecided about which modality to choose, or those new and

uneducated patients who start HD under suboptimal conditions may be dialyzed in a community-based facility or in a dedicated room adjacent to a home dialysis training area. Specialized nurses provide emotional support and gently teach patients the benefits of home dialysis in these areas, and actively encourage patients to choose a final modality that consists of either PD or home HD. A detailed discussion of the advantages and disadvantages of home dialysis should be provided. This discussion should include a thorough exploration of patient apprehensions and misapprehensions.^{12,21} This support should be available to undecided patients for at least a month before they are considered as in-center HD patients.

Even among patients who do start on in-center HD, it is often possible to promote future consideration of home dialysis. Education to all patients, therefore, must be comprehensive and demonstrate the benefits of home HD. Whenever possible, patients should be encouraged to participate in some level of self-care. Success in these activities can boost a patient's confidence to progress to independent home dialysis and allow for a fresh and more serious consideration of home dialysis.

Table 2. Key Strategies and Recommendations to Increase Home HD

Strategy	Recommendation
Individualized Patient Education	<ul style="list-style-type: none"> • Creation of a predialysis program or referral process to an established predialysis program • Criteria for patient referral to predialysis education • Established case management approach • Key performance indicator of patient education at defined eGFR
Patient Education Tools	<ul style="list-style-type: none"> • One-on-one individualized education • Educational materials clearly delineating and promoting the benefits of home dialysis • Written and audio-visual patient education materials • Group education sessions • Peer support groups or “expert home patients” • Tour of training centers
Staff Education	<ul style="list-style-type: none"> • Predialysis educator experienced in home dialysis • Established predialysis patient pathway • Physicians educated about home dialysis • Clinicians aware of the benefits of home dialysis and willing to promote home dialysis • Education to other clinical staff within region of home dialysis benefits
Service	<ul style="list-style-type: none"> • Established “home-first” philosophy • Adequate resourcing of predialysis educators and predialysis multidisciplinary team members • Adequate patient resources and promotional materials • Adequate training resources (staff and facility) • Available respite resources • 24-hour on-call service • Accessible patient database for benchmarking and screening • Annual audit of predialysis program (inclusion in quality improvement program) • Established multidisciplinary team reviews
Promote Patient Self-Management	<ul style="list-style-type: none"> • Provision of patient decision support tools • Individualized patient time lines/checklists for key milestones: <ul style="list-style-type: none"> » Patient education received » Patient modality decision made » Modality sign off » Home visit and assessment » Home issues identified and addressed » Referral access » Tour of home training unit, meet staff » Patient buddy linkage » Access established » Tentative training date

eGFR = estimated glomerular filtration rate

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Approaches to Remote Patient Populations

Patients living in remote areas should have equal access to renal services, including dialysis. Home dialysis is particularly suited to this patient group. Patients trained in home dialysis are able to return to their homes and continue in their normal activities with the least interruption to their lives and their families. There are many novel approaches to enable home dialysis. One example includes shared dialysis community facilities to accommodate those patients without a home deemed suitable for home HD. Patients who can perform unsupervised home HD can complete their HD within these shared settings. Approximately 7 of these community facilities now exist across Australia and New Zealand.²²⁻²⁵ More information about the Australian facilities can be found [here](#).

Selecting the First Patients for a New Home HD Program

To set up a new home HD program, it is important to initially select those patients who will most likely achieve success to train and then return home (Table 2). Below is a list of ideal characteristics your first patients should have.

- No comorbidities and no serious complications of kidney failure
- Life expectancy > 2 years
- Motivated and committed to go home
- Have a home suitable to accommodate home HD
- Literate with good self-management skills
- Physically fit and able to dialyze independently
- Established and reliable vascular access

Conclusion

A successful home dialysis program requires the commitment of the entire multidisciplinary team. The key to a successful home dialysis program is the identification and cultivation of patients who are suitable candidates to perform home dialysis. This process must start as early as possible using established guidelines and a multidisciplinary team approach to active promotion of home dialysis for suitable patients.

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References

1. Kidney Disease: Improving Global Outcomes (KDIGO) CKD Work Group. KDIGO 2012 Clinical Practice Guideline for the Evaluation and Management of Chronic Kidney Disease. *Kidney Int Suppl.* 2013;3:1-150
2. Goovaerts T, Jadoul M, Goffin E. Influence of a pre-dialysis education programme (PDEP) on the mode of renal replacement therapy. *Nephrol Dial Transplant.* 2005;20:1842-1847.
3. Goovaerts T, Jadoul M, Goffin E. Influence of a predialysis education program on the choice of renal replacement therapy. *Am J Kidney Dis.* 2012;60:499-500.
4. Key SM. Optimizing dialysis modality choices around the world: a review of literature concerning the role of enhanced early pre-ESRD education in choice of renal replacement therapy modality. *Nephrol Nurs J.* 2008;35:387-395.
5. Mendelssohn DC, Curtis B, Yeates K, et al. Suboptimal initiation of dialysis with and without early referral to a nephrologist. *Nephrol Dial Transplant.* 2011;26:2959-2965.
6. Levin A, Lewis M, Mortiboy P, et al. Multidisciplinary predialysis programs: quantification and limitations of their impact on patient outcomes in two Canadian settings. *Am J Kidney Dis.* 1997;29:533-540.
7. Wilson SM, Robertson JA, Chen G, et al. The IMPACT (Incident Management of Patients, Actions Centered on Treatment) program: a quality improvement approach for caring for patients initiating long-term hemodialysis. *Am J Kidney Dis.* 2012;60:435-443.
8. Thomas MC, Caring for Australians with Renal Impairment (CARI). The CARI guidelines. Prevention of progression of kidney disease: pre-dialysis education for patients with chronic kidney disease. *Nephrology (Carlton).* 2007;12 (Suppl 1):S46-48.
9. Mendelssohn DC, Toffelmire EB, Levin A. Attitudes of Canadian nephrologists toward multidisciplinary team-based CKD clinic care. *Am J Kidney Dis.* 2006;47:277-284.
10. Canadian Society of Nephrology. Report of the Canadian society of nephrology vascular access working group. *Semin Dial.* 2012;25:22-25.
11. Lewis AL, Stabler KA, Welch JL. Perceived informational needs, problems, or concerns among patients with stage 4 chronic kidney disease. *Nephrol Nurs J.* 2010;37:143-149.
12. Porter E, Watson D, Bargman JM. Education for patients with progressive CKD and acute-start dialysis. *Adv Chronic Kidney Dis.* 2013;20:302-310.
13. National Institute for Clinical Excellence. Guideline TA48. Guidance on home compared with hospital haemodialysis for patients with end-stage renal failure. 2002.
14. Young BA, Chan C, Blagg C, et al. How to overcome barriers and establish a successful home HD program. *Clin J Am Soc Nephrol.* 2012;7:2023-2032.
15. Khawar O, Kalantar-Zadeh K, Lo WK, et al. Is the declining use of long-term peritoneal dialysis justified by outcome data? *Clin J Am Soc Nephrol.* 2007;2:1317-1328.
16. Mehrotra R, Kermah D, Fried L, et al. Chronic peritoneal dialysis in the United States: declining utilization despite improving outcomes. *J Am Soc Nephrol.* 2007;18:2781-2788.
17. Marshall MR, Walker RC, Polkinghome KR, et al. Survival on home dialysis in New Zealand. *PLoS One* 2014;9 (5):e96847.
18. Schatell D. MATCH-D: a roadmap to home dialysis therapy. *Nephrol News Issues.* 2007;21:41-44.

References (cont'd)

19. Wingard RL, Pupim LB, Krishnan M, et al. Early intervention improves mortality and hospitalization rates in incident hemodialysis patients: RightStart program. *Clin J Am Soc Nephrol.* 2007;2:1170-1175.
20. Lacson E, Wang W, DeVries C, et al. Effects of a nationwide predialysis educational program on modality choice, vascular access, and patient outcomes. *Am J Kidney Dis.* 2011;58:235-242.
21. Watson D. Acute start-chronic needs: education and support for adults who have had acute start dialysis. *Semin Dial.* 2013;26:184-187.
22. Marley JV, Dent HK, Wearne M, et al. Haemodialysis outcomes of Aboriginal and Torres Strait Islander patients of remote Kimberley region origin. *Med J Aust.* 2010;193:516-520.
23. Villarba A, Warr K. Home haemodialysis in remote Australia. *Nephrology (Carlton).* 2004;9 (Suppl 4):S134-137.
24. Kneipp E, Murray R, Warr K, et al. Bring me home: renal dialysis in the Kimberley. *Nephrology (Carlton).* 2004;9 (Suppl 4):S121-125.
25. Marshall MR, van der Schrieck N, Lilley D, et al. Independent community house as a novel dialysis setting: an observational cohort study. *Am J Kidney Dis.* 2013;61:598-607.